Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Nuclear Magnetic Resonance Spectroscopy

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

C

[1]

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Q2.

(a)



1×AO1

1

(b) **S**

1

R

1

Q

1

(c) (Isomer **T**)

signals due to OH (alcohol) at 3230−3350 and C=O at 1680−1750

1

OH and C=O (functional groups) separated in molecule.

Allow not a carboxylic acid.

1

(Isomer U)

(only) signal for OH (alcohol) at 3230−3350

1

2 × OH groups present / diol / OH & cyclo(ether) structure.

Allow OH but not C=O.

1

(Isomer V)

signals due to OH (acid) at 2500−3000 (and C=O at 1680−1750)

carboxylic acid group / −COOH present.

1
1

(d) 2:2:2:3:3

Any order.

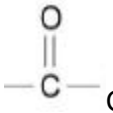
1

(e) (The quartet at δ=3.5 is for a CH_2 group) next to **−O−CH$_2$ OR** shifted significantly downfield by electronegative O

1

(is a quartet) because of an adjacent CH_3 group / couple with 3 adjacent protons

1

(singlet at δ=2.2 is for a CH_3 group) attached to  C**H$_3$ OR** shifted downfield by electronegative C=O

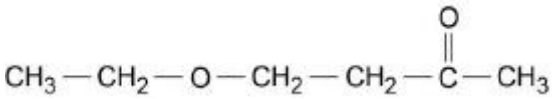
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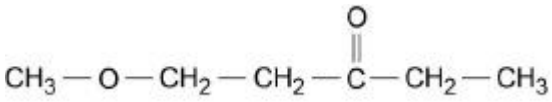
(is a singlet) because there are no adjacent protons / no coupling.

1

(f)



Allow 1 mark for:



2

[17]

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